

Docket No.: 2002P15176US/INTECH 3.0-077
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Killian et al.

Application No.: 10/657,362

Filed: September 8, 2003

For: FUSE LATCH CIRCUIT WITH
NON-DISRUPTIVE RE-INTERROGATION

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Group Art Unit: 2816
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Examiner: M. T. Nguyen
:
:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF MICHAEL A. KILLIAN UNDER 37 C.F.R. § 1.131

Dear Sir:

I, Michael A. Killian, a citizen of the United States, residing at 393 Stonefence Road, Richmond, VT 05477, hereby declare that:

1. I am one of the co-inventors of the above identified pending U.S. Patent Application No. 10/657,362 filed in the United States Patent and Trademark Office on September 8, 2003.

2. I am familiar with the prosecution of U.S. Patent Application No. 10/657,362 and am aware that the claims of the application were rejected under 35 U.S.C. § 102(e) as being anticipated by the Yamauchi patent (U.S. Patent No. 6,728,148).

3. I can establish that the subject matter of the invention claimed in Application No. 10/657,362 was conceived before the U.S. filing date of the Yamauchi patent, August 28, 2002.

MK

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4. Attached as Exhibit A is a copy of a disclosure of the invention that was executed by myself and by my co-inventor, Nicholas M. van Heel, and witnessed on a date prior to August 28, 2002.

5. As can be seen from the Exhibit, the invention claimed in the present application was conceived before the effective date of the Yamauchi patent.

6. I also declare that the invention was acted upon with due diligence from a time just prior to the effective date of the Yamauchi patent until the filing date of the present application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: December 7, 2004

By


Michael A. Killian

531140_1.DOC

EXHIBIT A

Fuse Latch with non-disruptive interrogation

Mike Killian, Nick van Heel 9/30/99

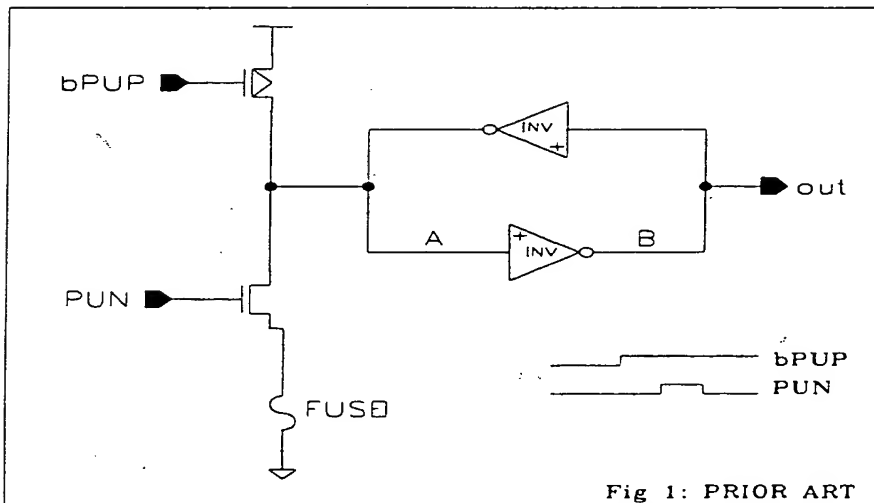
M. Killian 9/30/99 Nick van Heel 9/31/99

Problem solved by this invention:

Allows redundancy fuse latch to be re-interrogated during normal access cycles

Description / Prior Art:

Generation of electron-hole pairs due to cosmic rays can cause VLSI circuits to fail. In a DRAM, such an event can alter the cell voltage as well as flip the state of a latch. In most cases, this is only a temporary or "soft" fail since the affected circuit is typically rewritten or reset by a subsequent access. One particular circuit where this is not the case is the redundancy fuse latch of a memory device. The state of the fuse is typically interrogated and latched at power on, and if corrupted, would require the chip to be powered down and on again to attain its correct state. An alternative solution is to re-interrogate the latch periodically to refresh its state. With the current fuse latch configuration (Fig. 1), a reset and then set operation is required. Because the latch contains false information during the reset phase, the fuse reset must be "hidden" during a time when the chip is neither reading nor writing.



WITNESS:

Adam B. Wilson 9/30/99

J. Goff 9/30/99

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Current invention:

The modified fuse latch configuration allows the latch to be re-interrogated without the need of a reset phase (Fig.2). The intact and blown fuse cases are described below.

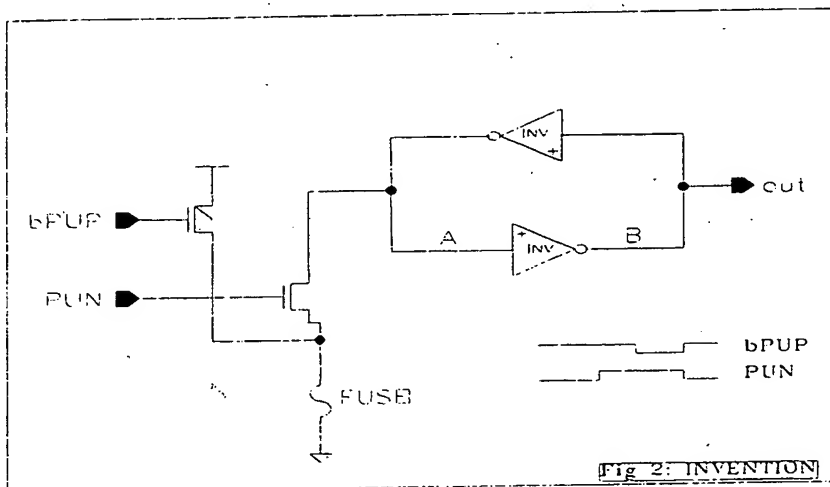
Intact fuse case (low R):

First the PUN signal is brought high which re-asserts node A of the latch low. With PUN still high, bPUP is activated. Since the resistance of the fuse is low, the state of the latch is not changed.

Blown fuse case (high R):

When the PUN signal is brought high, no change of state occurs since bPUP is also high and the fuse is open. With PUN still high, bPUP is activated (low) which re-asserts net A high.

Thus, the state of the latch is modified only when the information is corrupt, and can be re-interrogated at any time in the cycle.



WITNESS:

Adam B Wilson 9/30/99

J. Goff 9/30/99

M.K 9/30/99
nmh 9/30/99

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